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AUTHOR Dosa, Marta
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ABSTRACT

This paper argues that the building of human resource capabilities must move ahead simultaneously on several fronts: (1) basic, applied, and problem-focused research; (2) formal and nonformal education; (3) professional ethics and standards; (4) information policies; (5) technological skills and the ability to assess and select appropriate methods; and (6) communication capacity. The importance of research is discussed with special reference to agricultural information transfer in developing countries, and the economic and social problems of engaging in research projects involving agriculture information systems, services, and libraries are reviewed. However, the benefits of such research for education, professional development, information policies, technology, and communication are seen as a balance for the problems. The paper discusses an international cooperative program in information research based on regional activities and provides a realistic consideration of potential outcomes. Other topics addressed include: professional practice, education, and research; issues in human resources development; problem solving in interdisciplinary areas; and a proposal for cross-national cooperation in research activities. Twenty-five references are cited. (Author/THC)

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INTERNATIONAL COOPERATION IN HUMAN RESOURCE DEVELOPMENT

Marta Dosa
Syracuse University School of Information Studies
200 Huntington Hall, Syracuse, N.Y. 13210 USA

Societal and human problems such as adequate nutrition, agricultural innovation, rural conditions of life, and access to health care need the problem solving ability of many disciplines and professions. The process of problem solving and information production/use are determined by complex cultural and other factors. Information professionals play an important role in this process and their effectiveness may be further enhanced by strengthening certain aspects of human resource development.

The building of human resource capabilities must move ahead simultaneously on several fronts: (1) basic, applied and problem-focused research, (2) formal and nonformal education, (3) professional ethics and standards, (4) information policies, (5) technological skills and the ability to assess and select appropriate methods, and (6) communication capacity.

The paper discusses the importance of research with special reference to agricultural information transfer in developing countries. Economic and social problems of engaging in research projects involving agricultural information systems, services and libraries are reviewed. However, problems are balanced by the benefits of research for education, professional development, information policies, technology and communication. The paper discusses an international cooperative program in information research based on regional activities and a realistic consideration of potential outcomes.

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TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)."

> Scientists must give greater prominence to large human concerns when choosing their problems and formulating their results. In addition to the science of things, they must create a science of humanity, if they want the intellectual implications and practical applications of their efforts to be successfully woven into the fabric of modern life.
>
> René Dubos: So human an animal.

The idea of "a science of humanity" is a conceptual bridge with the potential of connecting different disciplines as well as different cultures. It holds the promise to bring together researchers, educators and decision makers in a joint enterprise of enhancing the quality of life wherever people believe in human development.

This session is dedicated to the role of human resources in mitigating problems of the world through the generation, transmittal and use of knowledge. In economic terms, resources are considered factors of production and basic inputs used to produce goods and services. Human resources include all forms of labor from the least skilled worker to the most highly skilled professional. The economics of information and knowledge is concerned with the optimum allocation of resources. Depending on the assumptions upon which investigations are based, human resources for the production and servicing of information and knowledge may encompass activities ranging from telephone operators through office workers to information managers (1).

Although the above mentioned approach to the work force aptly reflects the vast scope of information handling in modern society, both tradition and research provide us with a more usable description of a multiprofession of information. Accordingly, information professionals include information managers, librarians, archivists, records managers, and a few other categories of information specialists. Information scientists, on the other hand, represent the theory-oriented branch of a science of information.

In rapidly changing fields of professional practice, the roles of practitioners tend to diversify and branch out to the extent that the scope of each original profession is increasingly difficult to discern. In the case of such social phenomenon, it is often professional education that urges upon us the self-discipline of definition and clarity. The International Symposium on Harmonization of Education and Training Programmes in Information Science, Librarianship and Archival Studies, convened by UNESCO on 8-12 October 1984 in Paris, has generated an Action Plan, noting: "There was a consensus that a conscious effort should be made towards the realization of harmonization of education and training programmes for the information professions, beginning with the library, documentation/information and archives management professions" (2).

A delineation of the agricultural information professional (AIP) evolved from discussions at the 1980 IAALD Conference in Manila. The scope of the description includes, in addition to the above listed information handling roles, agricultural extension officers. According to Ronchi Martinelli, "...we represent a cluster of professions rather

than only one ..." (3). She supports her statement by an extensive overview of reports, documents and papers leading toward a formulation of a policy for agricultural information education.

Today, we center on the contributions of information professionals to the dissemination and application of knowledge in several major areas of world problems. This objective in itself presents an extremely broad spectrum of information activities and policies. My paper, however, will approach this compelling perspective from a very specific point of view. It proposes an international cooperative program to strengthen information science research and its use for problem solving in agriculture, food production and nutrition.

PROFESSIONAL PRACTICE, EDUCATION AND RESEARCH

The proposal is based on the following premises:

In the wake of the 1983 IAALD Conference in Nairobi, the education and training of agricultural information professionals received in-depth attention. The multiplicity of recommendations was synthesized and made widely available by Ronchi Martinelli (3). Highlights of the conference were captured also in a report by Russell (4). The conference papers serve as a broad foundation for implementation. Therefore, it may be efficacious to turn our thoughts to research upon which many long-range developments in professional education, practice and policy rest.

There are numerous national and international organizations which are engaged in information science and communication research bearing upon rural development and agriculture. Some are developing networks of investigators and consultants to facilitate interdisciplinary projects

and the dissemination of R & D work. Examples are the International Network for Educational Information (INED) created by the International Bureau of Education (IBE) and the Transnational Network for Appropriate Technology (TRANET) which operates the TRANET Clearinghouse in Rangeley, Maine, USA. The European Coordination Centre for Research and Documentation in Social Sciences (ECSSID) in Vienna, Austria, and UNESCO's Data Retrieval System for the Social Sciences (DARE) represent resources which are highly complimentary to the specialized research information emanating from the FAO information systems. The international information community is the beneficiary of the current awareness service R & D Projects in Documentation and Librarianship, jointly produced by FID and UNESCO.

These are only a few examples drawn from a vast array of resources, but they readily point to two problems. Indigenous research in information science is still a rare phenomenon in developing countries. Moreover, rapid access to the right information at the right time from these rich resources is still difficult for information scientists and professionals in developing countries. There is a need for an information sharing network in the area of agriculture, food and nutrition that would address these particular problems. Instead of duplicating any of the existing collaborative programs, it would establish links between key subject specialists in each international program, system or network, and make this information widely known in the developing areas of the world.

SOME ISSUES IN HUMAN RESOURCE DEVELOPMENT

From farmer education to comprehensive rural development, information in many disguises plays a key role. Using quantitative data from eighteen studies carried out in low-income countries, Lockheed, Jamison and Lau were led to the conclusion that farm productivity increased as a result of farmer education (5). The necessity of effective management of innovation and data in rural development projects have been widely discussed (6, 7, 8). Information as a basic decision making tool in the analysis and management of agricultural programs was emphasized by Kulp (9). Schubert described agricultural marketing information systems in Brazil, India and Tanzania (10).

In the face of such diversification in the form and handling of information and data, a fundamental question arises. Where are the specialists who will not only design and manage information and data systems but will also be capable of linking systems with each other and making them accessible? Who are these professionals and what kind of education do they need?

More than a decade ago Schein's study of the professions noted incisive changes in educational trends. He recorded that "The values and needs of professional students are ... changing as they seek ways to engage in challenging projects in their careers, as they advocate extending professional services to clients who have been historically underserved, and as they demand flexible timing for their education and a different pacing and organization of the curriculum" (11, p. xi). The directions in professional practice which emerged in response to

these educational trends in the 1970s included an increase of interdisciplinary cooperation among professionals, a tendency to emphasize social consciousness, and reforms in professional preparation (11, p. 7).

In recent years, the rate of change in professional attitudes has quickened and become more controversial. Commercial advertisement of services, collective bargaining, fear of malpractice suits, and conflicting values within the same profession became household words in the United States and are making inroads in professional practice in some other countries. With the growth of computer and telecommunication technologies, practitioners in information-related activities find themselves in the midst of new ethical questions concerning information equity, the privacy of records, computer security, intellectual property, and the exchange of scientific information.

While professionals in technologically advanced countries have been struggling with the complexities of changing values and client-practitioner relationships, the professions in many developing countries still face the basic problem of producing the necessary human resource. Although there is certainly no scarcity of potential practitioners, the international literature reflects grave concern about appropriate education and training programs. Low-income societies have been hindered in developing their professional work force by the unavailability of educational opportunities, resource constraints, and the slow rate of change in curricula. Even where educational innovation has been introduced in spite of economic and technological barriers, problems of recruiting qualified teaching staff, establishing research programs and producing or acquiring educational materials are monumental.

These differences in professional concerns between developing and industrialized countries make the question "who are the information professionals and what kind of education do they need?" even more urgent. I would like to suggest two answers.

First, information professionals everywhere in the world are indispensable resources for national development. They are both generators and conduits of interdisciplinary knowledge and, as such, they have a momentous responsibility. Second, the education information professionals need is composed of theory and skills. Since the only activities that link theory with practice are research and dissemination, we must concentrate our energies on EDUCATION FOR CREATIVE PROBLEM SOLVING. In this sense there are no differences between developing and technologically advanced countries.

PROBLEM SOLVING IN INTERDISCIPLINARY AREAS

Research is often discussed as either basic or applied mode of investigation, its goal being either abstract knowledge or immediate utility. However, there is a third approach that has been neglected in the literature: problem-focused research. "In this area, the desire for knowledge is to a certain extent linked with the desire for action" (12, p. 578). Problem-focused research provides an appropriate framework for the study of information needs in rural development, agriculture, food and nutrition. Where the joint work of several disciplines and professions is needed to attempt solutions, the information

professional can be an equal partner. This role demands not only information handling skills, but also the ability to formulate and carry out research on information problems.

A problem, suggested Bartee, may be defined as "an unsatisfied need to change a perceived present situation to a perceived desired situation" (13, p. 439). The key concept here is "perception", leading to an almost intuitive identification of a problem. At least two consequences flow from this recognition. Original problem formulation, treatment and -- if achieved -- solution are subjective and culturally determined processes because they depend on human assumptions about "how things are" and "how they should be." For this reason, investigation of problems in a developing country ideally should be conducted by indigenous researchers or teams which include investigators from the local culture. Because of the dominance of subjective perspectives on a problem, data collection, analysis and interpretation are especially important. Apart of the possibility of data misuse or manipulation, these are objective and universal processes. Atinmo and Akinyele stated in their major nutrition policy study in Nigeria: "In particular, empirical data and conceptual frameworks are needed for understanding the social, economic, and historical determinants of malnutrition and the consequences for nutritional standards of different development strategies, public policies, institutional arrangements and technological changes (14). The same is true for nutrition information infrastructures.

A further argument for the development of an indigenous research corps in each country can be found in Bartee's concept of a "problem solving chronology" (13, pp. 443-447). This developmental view contains four phases: (1) PERSONALIZATION or individual problem solving, (2) COLLABORATION or data exchange and joint use, (3) INSTITUTIONALIZATION or problem-related decision making in organizations, and (4) SOCIALIZATION or the introduction of changes in social attitudes and norms. To this sequence, Bartee added the process of DIFFUSION (13, p. 446).

Each of these dimensions of research requires an understanding of cultural assumptions in the given social environment. In information science research of either the applied or problem-focused variety, the need for taking the cultural context into consideration is further heightened. Information professionals cannot possibly base their principles and practices on imported and unadjusted models (15). We may conclude that true international collaboration in human resource building will be achieved only by the ESTABLISHMENT AND CONTINUOUS ENHANCEMENT OF RESEARCH CAPABILITY in developing countries.

How can this be done? Education and training for information science research, sponsorship for new investigators, support of team research, increased availability of journals and conferences addressing research needs, and programs for the transfer of research methodologies and experience come readily to mind. All are beneficial propositions, but none assures ongoing two-way communication between researchers in developing and industrialized countries.

We can choose an approach which would effectively supplement the above methods. An international network of researchers in agricultural, food, and nutrition information would, above everything else, highlight the social significance of research. In developing countries, one of the direst problems information practitioners and educators who want to engage in research face is working in isolation. This has been the experience of investigators, not only in information science, but also in other fields. For example, in a study of agricultural research, Murphy wrote about the training of agricultural researchers by programs of the U.S. Agency for International Development that "the basic problems did not lie with training per se .... but with keeping the returned trainees working in research" (16). The network would strengthen the role of information researchers in developing countries vis-à-vis (a) researchers in other fields and (b) researchers in other countries.

THE PROPOSAL

The purpose of international collaboration is to assure that the building of human resource capacity in each country is moving ahead simultaneously on several fronts: (1) basic, applied and problem-focused research, (2) formal and nonformal education, (3) professional ethics and standards, (4) information policies, (5) technological skills, and (6) communication capacity. But it is cross-national cooperation in research that can be expected to stimulate all other activities. Therefore, the following proposal is submitted to this session:

1. In cooperation with other international associations and organizations, IAALD may find it timely to initiate an international network of information professionals who are engaged in research in agricultural, food and nutrition information.

2. Using existing media such as the Quarterly Bulletin of IAALD, potential research topics, innovative methodologies, suggestions for collaboration, current projects and recent findings may be announced.*

A data base of information (experts, projects, addresses, research reports and papers, etc.), identified by a survey and extracted from the announcements, may be created. The FID/ET Clearinghouse and other sites may be used in a cooperative pattern.

CONCLUSION

Rather than claiming to be a "first-time-ever", this proposal builds on the recommendations and experiences of experts and organizations in both collaborative research and information exchange (17, 18, 19, 20, 21, 22, 23, 24, 25).

The problems in terms of funding, staffing, time constraints, different interests and different information formats cannot be denied. However, these barriers may be eliminated if three principles are observed: (1) the network would serve knowledge and experience sharing by researchers rather than data or document sharing by formal systems, (2) the network would not duplicate the work of any existing information system, program or network but will link them and researchers

* For example, the "Idea Flash" column of the FID Education and Training Committee (FID/ET) Newsletter carries ideas and addresses of individuals rather than only organizations.

through contact persons, and (3) the network would connect information professionals who are specializing in research in agricultural, food and nutrition information and thus it would not get too general and unwieldy.

Experience and research have shown that international peer networking strengthens the creative work of individuals; opens the way to alternative modes of technology transfer; cuts across different formal programs; enhances the dissemination of research; and forestalls duplication of effort.

We hope that this session of the IAALD Conference will form a small step toward the realization of these benefits.

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